

Remarks

Applicants have received and carefully reviewed the Office Action mailed August 6, 2007. Claims 1-54 are pending, with claims 31-35 withdrawn by this response. Claims 1, 3, 5, 6, 10-13, 21, 22, 25, 36, 42, and 50-53 have been amended. Support for the amendments is found in the specification, claims, and drawings as originally filed. No new matter has been added. Reconsideration and allowance of the pending claims are respectfully requested.

Allowable Subject Matter

Applicants thank the Examiner for indicating that claims 6-8, 15, 18, and 21 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Rejection under 35 U.S.C. § 112, first paragraph

Claim 53-54 are rejected as failing to comply with the written description requirement. The claims have been amended to recite the openings are upstream and are formed by a sharp point in the conductive layer. Applicants submit that, as amended, the claims comply with the written description requirement. Reconsideration and withdrawal of the rejections are respectfully requested.

Rejection under 35 U.S.C. § 112, second paragraph

Claims 50-54 are rejected as being indefinite. The Examiner asserts that the "means" recited in claim 50 could all be the same element or could be referring to different elements, thus it does not distinctly claim the subject matter of the invention. Applicants submit that the claims, as amended, comply with the requirements of 35 U.S.C. § 112, second paragraph. Reconsideration and withdrawal of the rejection are respectfully requested.

Rejection under 35 U.S.C. § 102(b)

Claims 1-5, 9-12, 14, 16, 17, 20, 22-30, and 36-41 are rejected as being anticipated by Reader (US 3,554,669). Independent claim 1, as amended, recites:

1. (currently amended) An ion pump comprising:
 - an insulating layer;
 - a first conductive layer situated on a first side of the insulating layer;
 - a second conductive layer situated on a second side of the insulating layer;
 - a plurality of openings situated in the first conductive layer, the insulating layer and the second conductive layer forming channels having first and second discharge device electrodes, wherein the first electrode has a sharp-like shape at an upstream end, wherein the plurality of openings are grouped into upstream inputs and downstream outputs, and the openings situated at inputs are formed by upstream sharp-like conductor openings ends and the openings situated at outputs are formed by downstream non-sharp-like conductor openings ends; and
 - an enclosure containing the channels and having an input port proximate to an input side of the plurality of openings and an output port proximate to an output side of the plurality of openings.

Reader does not appear to teach such a structure. In particular, Reader teaches, "Projections 18 formed between the channels 16 are tapered to form sharp tips 18a at their downstream end", emphasis added; see column 2, lines 36-38. Reader thus appears to teach sharp tips at the output openings, rather than the upstream inputs, as is recited in the claims.

Independent claim 22 recites an ion pump in which a flow direction of the flow channel proceeds from an upstream prominent conductive material to a downstream non-prominent conductive material, wherein the conductive materials are electrodes forming the discharge device. Reader appears to teach a device in which flow is from an upstream rounded opening 16 towards the downstream sharp tip 18a opening. See FIGS. 1 and 2. The device of Reader thus appears to have the opposite configuration as that claimed.

Independent claim 25, as amended, recites, in part, "the first conductive material has an upstream projection into the channel" and "a flow direction of the channel is approximately parallel to the elongated dimension through the non-conducting spacer material and proceeds from the upstream projection into the channel." Emphasis added. As discussed above, Reader

appears to teach a device having sharp tips 18a at the downstream location of the openings, and thus appears to have a configuration reversed to that claimed.

Independent claim 36 recites, in part, "wherein the first orifice has an upstream sharp-like contour to achieve local high intensity electric fields." As discussed above, Reader appears to teach a sharp tip 18a at the second, downstream opening, as shown in FIGS. 1 and 2.

Independent claim 53, as amended, recites, in part, "a plurality of openings situated in the first conductive layer, the insulating layer and the second conductive layer forming channels having first upstream and second downstream discharge device electrodes, respectively, wherein the openings in the first conductive layer at the first discharge device electrodes are upstream and are formed by a sharp point in the conductive layer." Emphasis added. As discussed above, Reader appears to teach sharp tips 18a at the exit, or downstream end of the first conductive layer. See FIGS. 1 and 2.

For at least the reasons set forth above, Reader does not appear to teach each and every element of the independent claims or the claims dependent thereon. Additionally, there is no motivation or suggestion for one of ordinary skill in the art to modify Reader to achieve the claimed device. Reconsideration and withdrawal of the rejection are respectfully requested.

Rejection under 35 U.S.C. § 103(a)

Claim 13 is rejected as being unpatentable over Reader. For at least the reasons set forth above, Reader does not appear to teach each and every element of independent claim 1, from which claim 13 depends. Additionally, there is no motivation for one of ordinary skill in the art to modify the device of Reader to achieve the claimed device. Reconsideration and withdrawal of the rejection are respectfully requested.

Claim 19 is rejected as being unpatentable over Reader in view of Fischer (US 6,583,407). For at least the reasons set forth above, Reader does not appear to teach each and every element of independent claim 1, from which claim 19 depends. Fischer does not appear to teach what Reader lacks. Additionally, there is no motivation for one of ordinary skill in the art

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to modify the devices of Reader and/or Fischer to achieve the claimed device. Reconsideration and withdrawal of the rejection are respectfully requested.

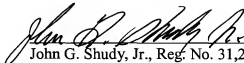
Claims 42-46 and 49 are rejected as being unpatentable over Reader in view of Henoch (US 6,106,236). Independent claim 42, as amended, recites, in part, "shaping the first electrode to have an upstream sharp-like opening at a first end so as to be suitable for providing a corona of ionization of a fluid." As discussed above, Reader does not appear to teach such a structure or method step of providing such a shape to the first electrode. Henoch does not appear to provide what Reader lacks. Thus, even if one were to combine the teachings of Reader and Henoch, one would not arrive at the claimed method. Further, there is no motivation for one of ordinary skill in the art to modify Reader and/or Henoch to achieve the claimed method. Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 47-48 are rejected as being unpatentable over Reader in view of Henoch and further in view of Fischer (US 6,583,407). For at least the reasons set forth above, neither Reader nor Henoch teaches or suggests the basic elements of claim 42, from which claims 47-48 depend. Fischer does not appear to provide what Reader and Henoch lack, as discussed above. Reconsideration and withdrawal of the rejection are respectfully requested.

Reconsideration and reexamination are respectfully requested. It is submitted that, in light of the above remarks, all pending claims are now in condition for allowance. If a telephone interview would be of assistance, please contact the undersigned attorney.

Respectfully submitted,

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